REMARKS

Applicants wish to thank the Examiner for considering the present application. In the Office Action dated August 23, 2002, claims 1-14 are pending in the application. Applicants respectfully request the Examiner for reconsideration.

Claims 3-9 stand objected to for two informalities. Applicants have fixed the informalities as suggested by the Examiner.

Claims 1-3 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 3 has been amended to recite the roll angular rate signal and the yaw motion signal to clarify claim 3. Applicants believe this rejection is now overcome.

Claims 1-14 stand rejected under 35 U.S.C. §102(b) as being anticipated by *Schiffmann* (6,192,305). Applicants respectfully traverse.

Claim 1 uses the signals generated by two angular rate sensors, a lateral accelerometer, a longitudinal accelerometer, and a wheel speed sensor to ultimately determine a relative roll and a relative pitch of the vehicle using a controller. Intermediate calculations include determining a roll gradient and a pitch gradient, which in turn are used to determine the relative roll and the relative pitch. The controller determines the roll gradient, the pitch gradient is based upon a past raw pitch rate and a current raw pitch rate, the second angular rate signal, and the longitudinal acceleration signal. The roll gradient is based upon the past roll rate and the current raw roll rate, the first angular signal, or the second angular rate signal. A global roll attitude and a global pitch attitude are determined from the first angular rate signal, the second

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angular rate signal, the lateral acceleration signal, and the longitudinal acceleration signal.

The *Schiffmann* reference determines vehicle rollover using a yaw rate estimation. Thus, yaw rate is not determined but estimated. Applicants admit that the *Schiffmann* reference determines a pitch rate, a yaw rate, and uses a vertical acceleration signal, a lateral acceleration signal, and a longitudinal acceleration signal as illustrated in Figs. 1 and 2A. The Examiner points the applicants to Figs. 1-3B and Col. 3-7. Applicants have reviewed these sections and can find no teaching or suggestion of many of the steps performed by the controller. Namely, the *Schiffmann* reference is completely devoid of language that teaches or suggests determining a roll gradient or a pitch gradient, let alone a pitch gradient based upon a past raw roll rate and a current raw roll rate, the roll angular rate signal, and the lateral acceleration signal. Likewise, no teaching or suggestion is found in *Schiffmann* reference for teaching that the pitch gradient is based upon a past pitch rate, current raw pitch rate, the calculated pitch angle rate signal, and the longitudinal acceleration signal. These recitations are from claim 3. Also, *Schiffmann* teaches estimating yaw rate. Claim 3 provides a yaw rate sensor.

Claim 1 has also similar recitations but uses the first angular rate signal or the second angular rate signal. Claim 10 also has similar limitations with respect to the roll gradient.

Claim 14 uses the roll rate, lateral acceleration, longitudinal acceleration, and yaw rate of the vehicle body to determine the relative roll angle, the relative pitch angle, the global roll angle, and global pitch angle. The *Schiffmann* reference is a

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system for vehicle rollover using a yaw rate estimation. Thus, because the *Schiffmann* reference uses a yaw rate estimation, there is no teaching of the step of "measuring a yaw rate of the vehicle." Measuring yaw rate connotes measuring the yaw rate of the vehicle body using a yaw rate sensor rather than estimating the yaw rate of the vehicle. The yaw rate of the vehicle is one of the signals that is used to determine the relative roll angle, the relative pitch angle, the global roll angle, and the global pitch angle as described above. There is no teaching or suggestion in the *Schiffmann* reference for all of these determinations. Applicants respectfully request the Examiner to reconsider this rejection.

In light of the above remarks, applicants submit that all objections and rejections are now overcome. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments the Examiner is respectfully requested to call the undersigned attorney.

Please charge any fees required in the filing of this amendment to Deposit Account 06-1510.

Official

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GROUP 3600

Respectfully submitted,
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Claims:

1. (Amended) A control system for an automotive vehicle having a vehicle body comprising:

a first angular rate sensor generating a first angular rate signal corresponding to a first angular motion of the vehicle body;

a second angular rate sensor generating a second angular rate signal corresponding to a second angular motion of the vehicle body;

a lateral accelerometer generating a lateral acceleration signal corresponding to a lateral acceleration of a center of gravity of the vehicle body;

a longitudinal accelerometer generating a longitudinal acceleration signal corresponding to the longitudinal acceleration of the center of gravity of the vehicle body;

a wheel speed sensor generating a wheel speed signal corresponding to a wheel speed of the vehicle; and

a controller coupled to said first angular rate sensor, said second angular rate sensor, said lateral accelerometer, said longitudinal accelerometer, and said wheel speed sensor, [said controller determining a global roll attitude and a global pitch attitude from the first angular rate signal, and the second angular rate signal, lateral acceleration signal and the longitudinal acceleration signal,] said controller determining a roll gradient based upon a past raw roll rate and current raw roll rate, the first angular rate signal or the second angular rate signal and the lateral acceleration signal, a pitch gradient based upon a past raw pitch rate and current raw pitch rate, the first or second angular rate signal and the longitudinal acceleration signal, determining a relative roll and relative pitch as a function of the roll gradient and the pitch gradient.

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3. (Amended) A control system for an automotive vehicle having a vehicle body comprising:

a roll angular rate sensor generating a roll angular rate signal corresponding to [an] a roll angular motion of the vehicle body;

a yaw angular rate sensor generating a yaw motion signal corresponding to a yaw motion of the vehicle body;

a lateral accelerometer generating a lateral acceleration signal corresponding to a lateral acceleration of a center of gravity of the vehicle body;

a longitudinal accelerometer generating a longitudinal acceleration signal corresponding to the longitudinal acceleration of the center of gravity of the vehicle body;

a wheel speed sensor generating a wheel speed signal corresponding to a wheel speed of the vehicle; and

a controller coupled to said roll angular rate sensor, said yaw angular rate sensor, said lateral accelerometer, said longitudinal accelerometer, and said wheel speed sensor, said controller determining [a global roll attitude and a global pitch attitude from the roll rate, lateral acceleration signal and the longitudinal acceleration signal, determining] a pitch rate in response to said [first] roll angular rate signal, said [second angular rate] yaw motion signal, said lateral acceleration signal, said longitudinal acceleration signal, and said wheel speed signal, said controller determining a roll gradient based upon a past raw roll rate and current raw roll rate, the roll angular rate signal and the lateral acceleration signal; a pitch gradient based upon a past raw pitch rate and current raw pitch rate, the calculated pitch angular rate signal and the longitudinal acceleration signal, determining a relative roll and relative pitch as a function of the roll gradient and the pitch gradient.

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4. (Amended) A control system as recited in claim 3 further comprising a safety system coupled to said controller, said controller generating a control signal to said safety system in response to said [the] relative roll angle, the relative pitch angle, [the] a global roll attitude and [the] a global pitch [angle] attitude.

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